



DEPARTMENT OF THE NAVY  
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02 JUL 1996

From: Commanding Officer, Navy Environmental Health Center  
To: Commanding Officer, Atlantic Division, Naval Facilities  
Engineering Command, ATTN: Katherine Landman, 1510 Gilbert  
Street, Norfolk, VA 23511-2699

Subj: MEDICAL REVIEW OF INSTALLATION RESTORATION PROGRAM  
DOCUMENTS FOR MARINE CORPS BASE, CAMP LEJEUNE, NC

Ref: (a) Baker Environmental, Inc. transmittal ltr of 13 May 96

Encl: (1) Medical Review of "Draft Feasibility Study Report,  
Operable Unit No. 6 (Sites 36, 54, and 86), Marine  
Corps Base, Camp Lejeune, North Carolina"  
(2) Medical/Health Comments Survey

1. Per reference (a), we have completed a medical review of the  
"Draft Feasibility Study Report, Operable Unit No. 6 (Sites 36,  
54, and 86), Marine Corps Base, Camp Lejeune, North Carolina."  
Our comments are included for your information as enclosure (1).

2. Please complete and return enclosure (2). Your comments are  
needed to continually improve our services to you.

3. The point of contact for this review is Ms. Wendy Bridges or  
Mr. David McConaughy, Health Risk Assessment Department. If you  
would like to discuss this medical review or if you desire  
further technical assistance, please call (757) 363-5552 or 363-  
5557. The DSN prefix is 864.

*Andrea Lunsford*  
A. E. LUNSFORD  
By direction

**MEDICAL REVIEW OF DRAFT FEASIBILITY STUDY REPORT,  
OPERABLE UNIT NO. 6 (SITES 36, 54, and 86), MARINE CORPS BASE,  
CAMP LEJEUNE, NORTH CAROLINA**

- Ref: (a) Risk Assessment Guidance for Superfund, Volume I, Part A: Human Health Evaluation Manual, December 1989 (EPA 540/1-89/002)  
(b) Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, October 1988 (EPA/540/G-89/004)

**General Comment:** The draft document entitled "Feasibility Study Report for Operable Unit No. 6, Marine Corps Base, Camp Lejeune, North Carolina," dated 13 May 1996 was provided to the Navy Environmental Health Center (NAVENVIRHLTHCEN) for review on 16 May 1996. The report was prepared for Atlantic Division, Naval Facilities Engineering Command by Baker Environmental, Inc.

**Review Comments and Recommendations:**

**Site 36**

1. Page 1-8, Section 1.3.2, "Groundwater Investigation"

**Comment:** The text does not say whether groundwater samples taken were unfiltered, filtered, or both. We strongly recommend the collection of both filtered and unfiltered groundwater samples for assessing human health risks. Although we realize Region IV recommends a low-flow purge technique with a .45 micron filter, reference (a) states that "unfiltered groundwater data should be used to estimate exposure concentrations."

**Recommendation:** State in the final feasibility study whether filtered and/or unfiltered groundwater samples were taken and specifically how the groundwater sampling results, filtered or unfiltered, were used in the risk assessment.

2. Page 1-15, Section 1.5, "Human Health Risk Assessment"

**Comments:**

a. The text states that "Subsurface soil, groundwater, surface water, and sediment were evaluated for all of the future receptors." All future receptors were evaluated for subsurface soil exposure; however, the surface soil exposure scenario was not evaluated. Residential children and adults may be frequently exposed to surface soil. Construction workers may also be exposed to surface soil during work operations.

Enclosure (1)

b. To help in the identification of potential remedial technologies, reference (b), section 2.2.2.2 states the conceptual site model should include known and suspected sources of contamination, types of contaminants and affected media, known and potential routes of migration, and known or potential human and environmental receptors. The text of this feasibility study for Site 36 did not include a conceptual site model.

Recommendations:

a. Evaluate a surface soil exposure scenario for all future receptors who may contact surface soil, or provide justification for the elimination of the surface soil exposure scenario.

b. Include a conceptual site model in the final feasibility study report or specifically reference the document where the conceptual site model is located.

3. Table 5-1, "Summary of Detailed Analysis"

Comment: Reference (b), section 6.2.3.5, states that the short-term effectiveness evaluation criterion should address protection of the community and protection of workers during remedial actions. In Remedial Action Alternatives (RAA) 3 and 4, the report states that the potential risk to the community and workers will be increased. No discussion of protection to the community or workers is provided in RAA 3 or 4.

Recommendation: The specific risks to the community and workers during RAA 3 and 4 should be addressed. Discuss procedures for protecting the community and the workers during remedial activities, or provide justification for not recommending protection.

Site 54

4. Page 1-2, Section 1.2.1, "Site Location and Setting"

Comment: The text states that "An 8,000-gallon underground storage tank (UST) lies to the northwest of the burn pit." On the maps of Site 54 the location of the UST is not indicated. The location of the UST is important in identifying any possible contamination.

Recommendation: Provide the location of the UST on the Site 54 maps.

5. Page 1-15, Section 1.5, "Human Health Risk Assessment"

Comments:

a. The text states that "Construction workers were assessed for possible exposure to subsurface soil. Subsurface soil and groundwater exposures were evaluated for future residents." All future receptors were evaluated for subsurface soil exposure; however, the surface soil

exposure scenario was not evaluated. Residential children and adults may be frequently exposed to surface soil. Construction workers may also be exposed to surface soil during work operations.

b. To help in the identification of potential remedial technologies, reference (b), section 2.2.2.2 states the conceptual site model should include known and suspected sources of contamination, types of contaminants and affected media, known and potential routes of migration, and known or potential human and environmental receptors. The text of this feasibility study for Site 54 did not include a conceptual site model.

Recommendations:

a. Evaluate a surface soil exposure scenario for all future receptors who may contact surface soil, or provide justification for the elimination of the surface soil exposure scenario.

b. Include a conceptual site model in the final feasibility study report or specifically reference the document where the conceptual site model is located.

6. Table 5-1, "Summary of Detailed Analysis"

Comment: Reference (b), section 6.2.3.5, states that the short-term effectiveness evaluation criterion should address protection of the community and protection of workers during remedial actions. In Remedial Action Alternatives (RAA) 3 and 4, the report states that the potential risk to the community and workers will be increased. No discussion of protection to the community or workers is provided in RAA 3 or 4.

Recommendation: The specific risks to the community and workers during RAA 3 and 4 should be addressed. Discuss procedures for protecting the community and the workers during remedial activities, or provide justification for not recommending protection.

Site 86

7. Page 1-4, Section 1.2.2, "Site History"  
Page 1-6, Section 1.3.1, "Soil Investigation"

Comment: On page 1-4, the document states that "a small pump house was constructed to transfer fuel oil to and from the ASTs (above ground storage tanks)." Later on page 1-6, soil borings are said to have been collected from "two separate locations where ancillary piping and equipment associated with the former storage tanks were located." Figure 1-2, which depicts soil sampling locations at Site 86, does not show the location of the pump house, ancillary piping, or equipment associated with this site.

Recommendation: All structures, equipment, and ancillary piping associated with Site 86 should be identified in Figure 1-2 and other relevant figures.

8. Page 1-5, Section 1.5, "Human Health Risk Assessment"

Comment:

a. The text states that "Construction workers were assessed for possible exposure to subsurface soil. Subsurface soil and groundwater exposures were evaluated for future residents." All future receptors were evaluated for subsurface soil exposure; however, the surface soil exposure scenario was not evaluated. Residential children and adults may be frequently exposed to surface soil. Construction workers may also be exposed to surface soil during work operations.

b. To help in the identification of potential remedial technologies, reference (b), section 2.2.2.2 states the conceptual site model should include known and suspected sources of contamination, types of contaminants and affected media, known and potential routes of migration, and known or potential human and environmental receptors. The text of this feasibility study for Site 86 did not include a conceptual site model.

Recommendations:

a. Evaluate a surface soil exposure scenario for all future receptors who may contact surface soil, or provide justification for the elimination of the surface soil exposure scenario.

b. Include a conceptual site model in the final feasibility study report or specifically reference the document where the conceptual site model is located.

FROM: \_\_\_\_\_

(YOUR NAME/COMMAND)

TO: NAVENVIRHLTHCEN, ENVIRONMENTAL PROGRAMS

FAX: COM: (757) 444-7261/DSN: 564-7261

## MEDICAL/HEALTH COMMENTS - YOUR VIEW

Please help us improve our review process by indicating the extent to which you agree or disagree with the comments we provided your activity.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. "Value added" to IR/BRAC process?	1	2	3	4	5
2. Received in a timely manner?	1	2	3	4	5
3. High level of technical expertise?	1	2	3	4	5
4. Very useful to the RPM?	1	2	3	4	5
5. Contractor incorporated comments?	1	2	3	4	5
6. Easily readable/useful format?	1	2	3	4	5
7. Overall review was of high quality?	1	2	3	4	5
8. NAVENVIRHLTHCEN was easily accessible?	1	2	3	4	5
9. NAVENVIRHLTHCEN input during scoping or workplan development would be "value added"?	1	2	3	4	5
10. Added involvement in IR/BRAC document needed?	1	2	3	4	5

*Please return by fax using the box provided at the top of this page. If you have any other comments, please list them below or call Mr. David McConaughy, Head, Health/Risk Assessment Department, at (757) 363-5557, DSN prefix 864, at any time to discuss your viewpoint. As our customer, your comments and suggestions of how we can improve our services to you are important!*